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To regain the efficiency and excellence in its facilities, the Marine Corps needs to renovate or build new dining halls with a long-term (15 to 20 years) plan in mind.					
This report, Volume II of a four-volume set, analyses the demographic factors and food industry trends that may influence future food service and examines customer expectations through surveys and expert opinions. Volume I, the executive summary, establishes the analysis, synthesizes conclusions, and provides overall recommendations. Volume III is the systems analysis, detailing how man and machine support the food service effort. Volume IV provides physical layouts, decor recommendations, and equipment lists for suggested dining facility configurations.					
These volumes culminate the investigations of numerous people over the course of the project and are offered as templates for future Marine Corps dining facilities.					
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# TABLE OF CONTENTS

	<u>Page</u>
LIST OF TABLES	iv
INTRODUCTION	1
MARINE CORPS ENLISTED PERSONNEL DEMOGRAPHICS AND TRENDS	2
Marital Status	2
Age	3
Gender	4
Education	4
Race/Ethnic Background	6
Home of Record/Region	7
Summary	7
FOOD INDUSTRY TRENDS	10
Leading Commercial Entrees	10
Leading Entrees for Full Service Establishments	11
Leading Side Dishes for Full Service Establishments	11
Leading Commercial Fast-Food On-Menu Sandwich and Entree Appearances	12
Leading Commercial Fast-Food On-Menu Potato and Vegetable	12
Side Dish Appearances	12
Trends in Food Industry Equipment, Service and Clientele	12
Summary	14
MARINE CORPS FOOD SERVICE PERSONNEL: EXPERT OPINIONS	16
Procedure	16
Results	16
Factors Relating to Absenteeism	23
Summary	25
CONCLUSIONS	26
BIBLIOGRAPHY	27
APPENDIX: Marine Corps Long-Term (1990 to 2005) Food Service Questionnaire	29



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## LIST OF TABLES

<u>Table</u>	<u>Page</u>
1. Marital Status.	2
2. Current Age of Enlisted Marine Corps Personnel.	3
3. Gender of Enlisted Marine Corps Personnel.	4
4. Education Level of Enlisted Marine Corps Personnel.	5
5. Race/Ethnic Composition of Enlisted Marine Corps Personnel (1982-1985).	6
6. Race/Ethnic Composition of Enlisted Marine Corps Personnel (1971-1979).	6
7. Home of Record by Region.	8
8. Leading Commercial Entrees 1971 to 1984 (selected years).	10
9. Leading Commercial Full Service Establishments On-Menu Entree Appearances Excluding Sandwiches.	11
10. Leading Commercial Full Service Establishments On-Menu Vegetable Side Dish Appearances Excluding Potatoes.	12
11. Leading Commercial Fast-Food Establishments On-Menu Sandwich and Entree Appearances.	13
12. Leading Commercial Fast-Food Establishments On-Menu Potato and Vegetable Side Dish Appearances.	13
13. Critical Items for the Marine Corps Food Service System for Years 1990 to 2005.	17
14. Mean Rating of the 16 Marine Corps Food Service Experts on Each of the 163 Questionnaire Items.	20

# MARINE CORPS DINING CONCEPTS IN THE 1990's VOLUME II: DEMOGRAPHICS, TRENDS AND EXPERT OPINIONS

## INTRODUCTION

The objective of this effort was to generate information: (1) to establish the Marine Corps Food service requirements for the 1990's and (2) to aid in the development of design guides for renovation or construction of Marine Corps dining facilities.

Three separate investigations were performed. The first defined the user population which entailed examining 15 years worth of Marine Corps enlisted personnel demographic data. Included in the statistics were the variables of gender, age, education level, home of record, marital status, and race/ethnic background. These data were examined for trends which would help predict the demographic characteristics of the future Marine Corps food system customers and personnel.

The second area of investigation entailed a review of current and projected trends in the commercial food industry, including menu selection trends and industry trends in food preparation and service.

Third, opinions of experts in the Marine Corps food service programs were surveyed to provide insight into the future development of the food system to meet the needs of the diners and support the overall mission. Included are opinions on menu offerings, food quality, food service personnel, dining facility absenteeism, and dining/kitchen facilities.

## MARINE CORPS ENLISTED PERSONNEL DEMOGRAPHICS AND TRENDS

This section examines trends in demographics of the Marine Corps enlisted personnel during the last 15 years. These data and trends helped define the future Marine Corps food service customers and personnel. The demographic variables of marital status, age, gender, education, race/ethnic background, and home of record are presented. In addition, the implication of trends within these variables and the impact of future food systems are discussed.

### Marital Status

Enlisted Marines who are married will generally not use the dining facilities. Married personnel are usually provided housing and commuted ration allowances, which preclude use of any enlisted dining hall facility. Therefore, as the number of married enlisted personnel goes up, the potential number of dining hall patrons goes down. Of course, because of location or nature of mission, this generalization may not hold true for all enlisted married Marines or all bases.

As presented in Table 1, 27.8% of the enlisted Marine Corps personnel in 1971 were married, and by 1985 that percentage had increased to 41.2%, representing a net increase of over 20,000 individuals. From 1982 to 1985 there was a 6.7% increase in the level of married enlistees. This rate of increase is more than double the 3.1% increase during 1979 to 1982. However, a decrease in the marital rate was observed in the 1975 to 1979 period, preceded by a sizeable (7%) increase in the 1971 to 1975 period. From this 14-year overview, it appears that the number of married individuals shall continue to grow over the next two decades. However, we still expect the "single" Marine to continue to represent the majority of the enlisted personnel. The greatest impact of the increased number of married Marines will be reflected in a growing dependency ratio; as the number of marriages increase, family size and the number of dependents will increase.

TABLE 1. Marital Status.

	1985		1982		1979		1975		1971	
	#	%	#	%	#	%	#	%	#	%
Unknown	1,485	0.8	3,205	1.8	1,581	0.9	4,740	2.7		
Married	73,371	41.2	60,519	34.5	52,395	31.4	61,701	34.8	53,057	27.8
Single	99,279	55.8	111,510	63.6	112,995	67.7	110,926	62.5	137,547	72.2
No longer Married*	3,793	2.1								
		57.9								

\*(Divorced, interlocutory decree, legally separated, widowed, annulled)  
Prior to 1 July 1985 single and no longer married were reported as one group.

Source: Defense Manpower Data Center, Monterey, CA

## Age

As shown in Table 2, the majority of enlisted Marine Corps personnel are between the ages of 18 and 21. Over the 14-year period (1971 to 1985) this group has decreased as a percentage of the total population. This age group represented 56.9% of the total population in 1971 and 45.1% in 1985. Over this same period of time the 22 to 26 age group has increased by 8.6%. The combination of these two groups (18 to 26 years old) has consistently accounted for 76.9% to 80.1% of the total Marine Corps population. This trend appears to be a stable one.

TABLE 2. Current Age of Enlisted Marine Corps Personnel.

Current Age	1985		1982		1979		1975		1971	
	#	%	#	%	#	%	#	%	#	%
Unknown	289	0.2	3	0.0	1	0.0	3	0.0	665	0.3
17	818	0.5	1,688	1.0	3,455	2.1	7,032	4.0	6,325	3.3
18	10,617	6.0	13,750	7.8	16,804	10.1	21,516	12.1	16,879	8.9
19	20,840	11.7	22,935	13.1	24,496	14.7	31,976	18.0	29,140	15.3
20	24,842	14.0	25,667	14.6	26,824	16.1	27,466	15.5	33,698	17.7
21	23,864	13.4	24,226	13.8	23,982	14.4	20,762	11.7	28,521	15.0
22	17,215	9.7	18,033	10.3	16,544	9.9	14,486	8.2	19,685	10.3
23	12,407	7.0	12,774	7.3	10,967	6.6	9,783	5.5	11,171	5.9
24	10,492	5.9	10,018	5.7	7,367	4.4	7,278	4.1	7,269	3.8
25	8,935	5.0	8,089	4.6	5,548	3.3	5,593	3.2	3,440	1.8
26	7,411	4.2	6,350	3.6	4,415	2.6	4,571	2.6	2,711	1.4
27	6,227	3.5	4,724	2.7	3,487	2.1	3,697	2.1	2,282	1.2
28	5,388	3.0	3,825	2.2	3,140	1.9	3,175	1.8	2,359	1.1
29	4,542	2.6	3,229	1.8	2,615	1.6	1,734	1.0	2,111	1.1
30-39	20,962	11.7	17,008	9.7	14,581	8.9	15,033	8.5	19,005	9.9
40-49	2,943	1.6	2,755	1.6	2,621	1.7	3,069	1.7	4,091	2.1
50-59	136	0.0	160	0.0	124	0.0	193	0.0	1,252	0.6

Source: Defense Manpower Data Center, Monterey, CA

With the age composition of the Marine Corps heavily skewed toward young adults (18 to 26 years old), this age group will strongly influence food and menu preferences. Young singles (a major component of the Marine Corps enlisted personnel) lag behind the overall population in the health trend. Further efforts at nutrition education for this group may be met with passive resistance. Indeed young singles eat more beef and drink more coffee than the population as a whole and tend to snack more. Twenty-four percent of the meals eaten out by this group tend to be snacks compared to 14.5% for the population as a whole. Young singles also tend to be more sensitive to poor service, poor food quality, and inadequate portion size than other age groups.

## Gender

During the past 14 years, the gender composition of the Marine Corps has remained relatively stable. The percentage of female enlistees has risen from 1% in 1971 to 5.1% in 1985 (see Table 3). During the 1990's, it is expected that the percentage of females may rise slightly but should generally be about 5% of the total Marine Corps enlisted population. Since females are restricted to noncombat positions, it is not expected that a strong recruiting emphasis will be placed in this direction. Therefore, we may conclude that in the long run the ratio of males to females in the Marine Corps enlisted ranks will remain close to 20 to 1.

TABLE 3. Gender of Enlisted Marine Corps Personnel.

	1985		1982		1979		1975		1971	
	#	%	#	%	#	%	#	%	#	%
Male	168,887	94.9	167,360	95.5	161,470	96.7	174,525	98.4	188,623	99.0
Female	9,041	5.1	7,874	4.5	5,501	3.3	2,841	1.6	1,981	1.0

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Source: Defense Manpower Data Center, Monterey, CA

## Education

As shown in Table 4, the vast majority of Marine Corps enlistees are high school graduates. During the period 1979 to 1985, there was a decrease in those enlistees with 1 to 4 years of high school and no diploma and an increase in enlistees with a high school diploma or a equivalency degree. This trend may be expected to continue with the vast majority of enlistees having either high school or high school equivalent degrees. In 1985, this group of enlistees accounted for 94.8% of the total population.

This educational strata will have the greatest influence on training. Traditionally, MOSs involving food service have not attracted enlistees with higher education levels. This represents a strong negative impact on acquiring managerial and technical skills in a limited amount of time; the lower the educational level, the longer it takes to acquire proficiency in a given set of technical or managerial skills. Recruiting for specific food service MOSs may help in acquiring more trainable enlistees and more proficient managers.

TABLE 4. Education Level of Enlisted Marine Corps Personnel.

<u>Education Level</u>	1985		1982		1979		1975		1971	
	#	%	#	%	#	%	#	%	#	%
Unknown	332	0.2	427	0.2	107	0.1	2796	1.6	3490	1.8
7 yrs elem school	4	0.0	21	0.0	29	0.0	437	0.2	1271	0.7
8 yrs elem school	18	0.0	52	0.0	198	0.1	2296	1.3	4693	2.5
1 yr high school	38	0.0	190	0.1	919	0.6	8064	4.5	11645	6.1
2 yrs high school	1910	1.1	9097	5.2	13157	7.9	21498	12.1	21630	11.3
4 yrs high school.. no diploma or GED	2412	1.4	8070	4.6	11984	7.2	22483	12.7	22482	11.8
high school grad, diploma, etc.	157635	88.6	146754	83.7	130818	78.3	110024	62.0	106356	55.8
1 yr college	478	0.3	4820	2.8	4845	2.9	5646	3.2	1162	6.1
2 yrs college	2186	1.2	3658	2.1	3255	1.9	2810	1.6	4059	2.1
4 yrs college										
no diploma	12	0.0	818	0.5	712	0.4	750	0.4	1223	0.6
college grad	1712	1.0	1236	0.7	874	0.5	504	0.3	2806	1.1
Masters degree	120	1.0	90	0.1	73	0.0	35	0.0	1	0.0
Doctorate/first professional degree	12	0.0	1	0.0	0	0.0	24	0.0	46	0.0
Certificate of high school equivalency (GED)	11059	6.2	NA		NA		NA		NA	

Source: Defense Manpower Data Center, Monterey, CA



## Race/Ethnic Background

The race/ethnic composition of the Marine Corps has been relatively stable for the past 10 years. In general, the composition of the enlistees is approximately 70% white, 20% black, 5% Hispanic and 5% other. Tables 5 and 6 present the racial/ethnic composition of the Marine Corps personnel for selected years over a 14-year period.

TABLE 5. Race/Ethnic Composition of Enlisted Marine Corps Personnel (1982-1985).

	1985		1982	
	#	%	#	%
Caucasian	128,445	72.1	124,523	71.0
Black	36,084	20.3	37,495	21.4
Hispanic	8,786	4.9	8,837	5.0
American Indian/Alaska Native	1,018	0.6	1,057	0.6
Asian/Pacific Islander	1,696	1.0	1,313	0.7
Other/Unknown	<u>1,899</u>	1.1	<u>2,019</u>	1.3
	177,928		175,244	

Source: Defense Manpower Data Center, Monterey, CA

TABLE 6. Race/Ethnic Composition of Enlisted Marine Corps Personnel (1971-1979).\*

	1979		1975		1971	
	#	%	#	%	#	%
Caucasian Non-Spanish	113,982	68.3	130,091	73.3	155,242	81.4
Caucasian Spanish	9,956	6.0	12,714	7.2	9,806	5.1
Black	35,935	21.5	32,128	18.1	21,698	11.4
Malayan	0	0.0	0	0.0	0	0.0
Other	7,098	4.3	2,430	1.4	1,490	0.8
Unknown			<u>4</u>	0.0	<u>2,368</u>	1.2
	166,971		177,367		190,604	

\*Classification prior to 10/79 (MAS files)

Source: Defense Manpower Data Center, Monterey, CA

The influence that race/ethnic background has on the food service system should be limited to individual preferences for certain foods and food preparation styles in different geographic areas. The greatest influence being whether or not the geographic location of the establishment impacts the appearance of certain ethnic foods on menus. Certainly, we may expect Mexican foods to be more popular and be served more frequently in the Southwest and on the West Coast than in New England and on the East Coast.

#### Home of Record/Region

During the 1971 to 1985 period, the East North Central, South Atlantic, Middle Atlantic, and Pacific regions have been represented most strongly and traditionally account for approximately 65% of the total enlisted Marine Corps population. New York and California are the two states that most Marine enlistees listed as their home of record; these two states together account for 15% to 20% of the total enlisted population. Table 7 displays the home of record for a 14-year period between 1971 to 1985. Although home of record may offer ideas in menu planning concerning likes and dislikes and food preferences, it will probably not have any significant impact on dining hall design.

#### Summary

During the past 15 years there have not been any significant changes in the size, structure, or mission of the Marine Corps. Furthermore, it is anticipated that the size, structure, or mission will not differ greatly during the next 5 to 20 years. The two most evident trends in demographic composition of the enlistees are reflected in the marital status and gender statistics. In 1985, 41.2% of the enlisted personnel were married. This percentage is expected to continue to show modest increase in the coming 5 to 20 years. The percentage of female enlistees is expected to level off at about 5% of the total enlisted population. The impact of more married personnel should result in fewer dining hall patrons; however, this percentage should not significantly impact the design and planning of future dining facilities.

TABLE 7. Home of Record by Region.

New England	1985		1982		1979		1975		1971	
	#	%	#	%	#	%	#	%	#	%
ME	1,114	0.6	1,113	0.6	983	0.6	1,042	0.6	1,225	0.6
NH	929	0.5	919	0.5	927	0.6	621	0.4	748	0.4
VT	361	0.2	361	0.2	338	0.2	310	0.2	438	0.2
MA	3,690	2.1	3,953	2.3	4,271	2.6	3,403	1.9	4,372	2.3
RI	703	0.2	691	0.4	771	0.5	535	0.3	692	0.4
CT	2,209	1.2	2,423	1.4	2,298	1.41	1,850	1.0	2,668	1.4
<u>Mid Atlantic</u>										
NY	14,095	7.9	14,886	8.5	14,613	8.5	10,889	6.1	11,778	6.2
NJ	4,831	2.7	5,101	2.9	5,120	3.1	4,271	2.4	4,650	2.4
PA	10,441	5.9	9,553	5.5	9,172	5.5	10,121	5.7	11,804	6.2
<u>East North Central</u>										
OH	9,825	5.5	9,117	5.2	9,038	5.4	10,568	6.0	11,219	5.9
IN	5,756	3.2	5,428	3.1	5,019	3.0	5,463	3.1	5,686	3.0
IL	9,707	5.5	9,104	5.2	8,816	5.3	8,945	5.0	9,368	4.9
MI	9,084	5.1	8,363	4.8	7,293	4.4	6,972	3.9	8,224	4.3
WI	4,053	2.3	3,782	2.2	4,248	2.5	4,516	2.3	4,000	2.1
	38,425	21.6	35,794	20.5	34,414	20.6	36,104	20.3	38,497	20.2
<u>West North Central</u>										
MN	3,108	1.7	3,219	1.8	2,787	1.7	3,293	1.9	3,311	1.7
IA	2,645	1.5	2,429	1.4	2,182	1.3	2,420	1.4	2,671	1.4
MO	4,352	2.4	4,427	2.5	4,526	2.7	5,102	2.9	4,436	2.3
ND	370	0.2	345	0.2	376	0.2	551	0.3	659	0.3
SD	640	0.4	530	0.3	572	0.3	530	0.3	552	0.3
NE	1,307	0.7	1,362	0.8	1,420	0.9	1,173	0.7	1,232	0.6
KS	1,264	0.7	1,330	0.8	1,656	1.0	2,273	1.3	1,856	1.0
	13,686	7.6	13,642	7.8	13,519	8.1	15,342	8.8	14,687	7.6
<u>South Atlantic</u>										
DE	495	0.3	527	0.3	507	0.3	470	0.3	528	0.3
MD	4,117	2.3	4,282	2.4	3,680	2.2	3,296	1.9	3,734	2.0
DC	580	0.3	790	0.5	728	0.4	633	0.4	821	0.4
VA	4,670	2.6	4,561	2.6	4,096	2.5	4,367	2.5	4,297	2.3
WV	1,738	1.0	1,487	0.8	1,551	0.9	1,867	1.1	2,210	1.2
NC	4,638	2.6	4,462	2.5	3,539	2.1	5,373	3.0	5,089	2.7
SC	2,334	1.3	2,173	1.2	1,861	1.1	2,180	1.2	2,416	1.3
GA	4,206	2.4	4,000	2.3	3,098	1.9	3,407	1.9	3,821	2.0
FL	8,469	4.8	7,746	4.4	6,742	4.0	5,429	3.1	6,113	3.2
	31,247	17.6	30,028	17.0	25,802	15.4	27,022	15.4	29,029	15.4

TABLE 7. Home of Record by Region (cont'd).

		1985		1982		1979		1975		1971	
		#	%	#	%	#	%	#	%	#	%
<u>East South Central</u>											
KY	2,524	1.4	2,349	1.3	2,180	1.3	2,412	1.4	2,661	1.4	
TN	3,325	1.9	3,037	1.7	2,624	1.6	2,907	1.6	3,736	2.0	
AL	2,931	1.6	3,021	1.7	2,576	1.5	2,939	1.7	3,370	1.8	
MS	1,545	0.9	1,431	0.8	1,275	0.8	1,580	0.9	1,606	0.8	
	<u>10,325</u>	<u>5.8</u>	<u>9,838</u>	<u>5.5</u>	<u>8,655</u>	<u>5.2</u>	<u>9,838</u>	<u>5.6</u>	<u>11,373</u>	<u>6.0</u>	
<u>West South Central</u>											
AR	1,633	0.9	1,639	0.9	1,604	1.0	2,200	1.2	2,196	1.2	
LA	2,735	1.5	2,591	1.5	2,590	1.6	3,750	2.1	3,807	2.0	
OK	1,584	0.9	1,428	0.8	1,604	1.0	2,728	1.5	2,869	1.5	
TX	10,081	5.7	10,102	5.8	10,881	6.5	13,069	7.4	11,802	6.2	
	<u>16,033</u>	<u>9.0</u>	<u>15,760</u>	<u>9.0</u>	<u>16,679</u>	<u>10.1</u>	<u>21,747</u>	<u>12.2</u>	<u>20,674</u>	<u>10.9</u>	
<u>Mountain</u>											
MT	582	0.3	611	0.3	653	0.4	692	0.4	907	0.5	
ID	733	0.4	664	0.4	652	0.4	900	0.5	798	0.4	
WY	384	0.2	349	0.2	312	0.2	277	0.2	316	0.2	
CO	2,222	1.2	2,209	1.3	2,527	1.5	2,263	1.3	1,912	1.0	
NM	1,195	0.7	1,311	0.7	1,294	0.8	1,407	0.8	1,472	0.8	
AZ	2,222	1.2	2,245	1.3	2,090	1.3	2,217	1.2	2,380	1.2	
UT	628	0.4	522	0.3	396	0.2	652	0.4	1,008	0.5	
NV	520	0.3	519	0.3	444	0.3	481	0.3	658	0.3	
	<u>8,486</u>	<u>4.7</u>	<u>8,430</u>	<u>4.8</u>	<u>8,368</u>	<u>5.1</u>	<u>8,889</u>	<u>5.1</u>	<u>9,451</u>	<u>4.9</u>	
<u>Pacific</u>											
WA	3,074	1.7	3,064	1.7	2,260	1.6	2,885	1.6	3,103	1.6	
OR	1,910	1.1	1,965	1.1	1,821	1.1	1,938	1.1	2,676	1.4	
CA	14,382	8.1	14,905	8.5	14,460	8.7	16,354	9.2	16,634	8.7	
AK	188	0.1	168	0.1	149	0.1	149	0.1	142	0.1	
HI	536	0.3	680	0.4	772	0.5	567	0.3	735	0.4	
	<u>20,090</u>	<u>11.3</u>	<u>20,782</u>	<u>11.8</u>	<u>9,462</u>	<u>12.0</u>	<u>21,893</u>	<u>12.3</u>	<u>23,290</u>	<u>12.2</u>	

Source: Defense Manpower Data Center, Monterey, CA

## FOOD INDUSTRY TRENDS

This section presents trends in the commercial food service industry. These trends are identified in relation to the on-menu occurrence for specific food items and their popularity (frequency of menu occurrence). On-menu appearance rankings for the top five entrees and side orders are presented for selected years over a 15-year period; separate listings for full service and fast service (fast-food) establishments are provided. In addition, a separate listing of the overall leading commercial entrees for selected years from 1971 to 1984 is given.

### Leading Commercial Entrees

In examining the top five entrees for selected years from 1971 to 1984, it can be seen in Table 8 that food preferences change slowly. Three of the top five entrees of 1971 also appear on the top five list for 1984. Fried chicken, roast beef, and baked ham appear to be a stable part of the food preferences of mainstream American. However, the emergence of the entree salad in the top five listing reflects the popularity of salad bars in recent years. In 1984, chili emerged as the front runner in on-menu appearances indicating a strong growth in its acceptance over the 15-year period, and Mexican entrees as a whole have shown strong growth since the early 1970s.

TABLE 8. Leading Commercial Entrees 1971 to 1984 (selected years).

### Ranking in Relation to Menu Appearances

	<u>1984</u>	<u>1980</u>	<u>1976</u>	<u>1971</u>
1	Chili	Fried Chicken	Steak	Steak
2	Fried Chicken	Fried Shrimp	Fried Chicken	Fried Shrimp
3	Roast Beef	Roast Beef	Fried Shrimp	Fried Chicken
4	Entree Salad	Baked Ham	Roast Beef	Roast Beef
5	Baked Ham	Steak	Entree Salad	Baked Ham

Source: Restaurants and Institutions, February 19, 1986, p. 133.

### Leading Entrees for Full Service Establishments

Table 9 presents the top five entrees for full service food establishments in relation to their frequency of menu appearances. The steak dinner has consistently ranked at or near the top of the list in relation to menu appearances. However, the appearance of three types of seafood and an entree salad to the top five items indicates a concern for lighter and healthier entrees at full service establishments. Seafood is gaining in popularity with shrimp topping the list in menu appearances. Other seafood entrees that are gaining in popularity at full service establishments are scallops, tuna, cod, swordfish, shark, lobster, salmon, and Pacific sole. As might be expected, seafood entrees appear most frequently on menus in the Northeast region of the U.S. In the South, oysters, catfish, and blue crab frequently appear on menus with perch and whitefish being popular in the Central states. Pacific sole, Dungeness crab, and Abalone appear frequently on menus in the West.

TABLE 9. Leading Commercial Full Service Establishments On-Menu Entree Appearances Excluding Sandwiches.

#### Ranking in Relation to Menu Appearances

	<u>1984</u>	<u>1980</u>	<u>1976</u>	<u>1971</u>
1	Steak	Fried Shrimp	Steak	Steak
2	Fried Shrimp	Steak	Fried Shrimp	Fried Shrimp
3	Other Shrimp	Fried Chicken	Fried Chicken	Roast Beef
4	Entree Salad	Roast Beef	Entree Salad	Fried Chicken
5	Scallops	Baked Ham	Roast Beef	Pork Chops

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Source: Restaurants and Institutions, February 19, 1986, p. 134.

### Leading Side Dishes for Full Service Establishments

As shown in Table 10, the frequency of on-menu appearance of side dishes at full service restaurants is quite stable. Three of the top five side dishes (carrots, green beans, and peas) are the same for 1984, 1980, 1976, and 1971. Broccoli has appeared in the top spot for 1984 and has shown a strong increase since 1971, while the on-menu frequency of green beans slid to the number three ranking. Onion rings remain in the top five list despite the increasing trend toward lighter and less fried foods.

**TABLE 10. Leading Commercial Full Service Establishments On-Menu Vegetable Side Dish Appearances Excluding Potatoes.**

Ranking in Relation  
to Menu Appearances

	<u>1984</u>	<u>1980</u>	<u>1976</u>	<u>1971</u>
1	Broccoli	Carrots	Mixed Vegetable	Green Beans
2	Carrots	Green Beans	Green Beans	Peas
3	Green Beans	Peas	Peas	Corn
4	Onion Rings	Onion Rings	Carrots	Carrots
5	Peas	Rice Dishes	Onion Rings	Rice Dishes

Source: Restaurant and Institutions, February 19, 1986, p. 134.

Leading Commercial Fast-Food On-Menu Sandwich and Entree Appearances

As reflected in the 1984 ratings for on-menu appearances in Table 11, the cheeseburger and hamburger are the most frequently appearing entree/sandwiches on fast-food menus. The hamburger and the cheeseburger have consistently been in the top five fast-food entree/sandwich items during the last 15 years. It appears that the fast-food entree/sandwich market will continue to gain popularity on fast-food menus. This trend appears to be one that has not peaked. In 1984, the hog dog was the number 4 sandwich/entree. In contrast, the fish sandwich is slipping in on-menu popularity and the chicken patty is gaining, having appeared as the number 5 entree/sandwich in relation to on-menu appearances in 1984. Also gaining popularity in the fast-food market is chili, which has more than doubled its on-menu occurrences since 1971.

Leading Commercial Fast-Food On-Menu Potato and Vegetable Side Dish Appearances

French fries and onion rings continue to dominate the on-menu appearances for fast-food side orders (see Table 12). French fries have consistently been the most popular item and it is expected that their popularity will continue. Three other potato side orders are included in the top five items for 1984: potato chips, American fries, and baked potatoes. It is expected that fast-food side orders will continue to be represented primarily by potatoes and the popularity of the baked potato will continue to grow as both a side order and more recently as an entree.

Trends in Food Industry Equipment, Service and Clientele

One area of current technological advancement in the food service industry is in kitchen equipment. Size and weight considerations will become increasingly more important (equipment will be designed to accommodate persons

TABLE 11. Leading Commercial Fast-Food Establishments On-Menu Sandwich and Entree Appearances.

Ranking in Relation  
to Menu Appearances

	<u>1984</u>	<u>1980</u>	<u>1976</u>	<u>1971</u>
1	Cheeseburger	Ham Sandwich	Hamburger	Ham Sandwich
2	Hamburger	Hamburger	Cheeseburger	Hamburger
3	Ham & Cheese	Cheeseburger	Ham Sandwich	Cheeseburger
4	Hot Dog	Hot Dog	Fish Sandwich	Fish Sandwich
5	Chicken Patty	Fried Chicken	Fried Chicken	Grilled Cheese

Source: Restaurants and Institutions, February 19, 1986, p. 142.

TABLE 12. Leading Commercial Fast-Food Establishments On-Menu Potato and Vegetable Side Dish Appearances.

Ranking in Relation  
to Menu Appearances

	<u>1984</u>	<u>1980</u>	<u>1976</u>	<u>1971</u>
1	French Fries	French Fries	French Fries	French Fries
2	Onion Rings	Onion Rings	Onion Rings	Hash Browns
3	Potato Chips	Mashed Potatoes	Mashed Potatoes	Mashed Potatoes
4	American Fries	Hash Browns	Baked Potato	Onion Rings
5	Baked Potato	Baked Beans	Hash Browns	Baked Beans

Source: Restaurants and Institutions, February 19, 1986, p. 142.

of both genders). Ease of use and maintenance as well as efficiency will become primary design goals. The equipment will become increasingly more flexible and will be expected to perform multiple tasks. For example, convection ovens that also utilize steam are already on the market as are combination refrigerators/oven units. The use of ultrasonic cleaning in which sound waves are used to vibrate water molecules may become the future "standard" for dishwashing. Thermoelectric refrigeration systems which are solid state (no compressor or coils) may prove to be a wave of the future. For cooking surfaces, the induction cooktop shows promise, generating a magnetic field over the cooktop so that while the stove itself doesn't get hot a pot placed on it does.



Kitchen equipment design will continue to incorporate the influence of robotics. The greatest emphasis of robotic technology in the kitchen should be in equipment design that reduces or eliminates labor-intensive jobs (e.g., sandwich making, vegetable peeling, etc.).

A practice that is gaining in popularity is "cry-o-vacing" or the pouch/vacuum cooking method. In this method fresh raw food is prepared and vacuum-packed in plastic pouches making it refrigerator stable for up to 6 days or more. The pouches can contain a single serving or a banquet portion and are transferred to a convection steamer for cooking. The quality of the food is excellent; the food cooks entirely sealed in its own natural juices and the need for additional seasonings is reduced. Using this process, the preparation work can be done days ahead of time in a centralized location and the meals cooked as needed at the place of serving.

Technology should also continue to make inroads in such food production techniques as hydroponics, fish farming, and bioengineering. These techniques combined, with transportation systems that allow for overnight delivery, should ensure a supply of fresh and diverse foods. Isolated soy protein, a 90% protein substance without a soy flavor, and similar products should become more popular. Other food preparation processes such as surimi (the grinding of inexpensive fish into particles that are reformed with flavor additives and binders to simulate shrimp, crab, or lobster) should become increasingly more common.

In the next 20 years a more discriminating customer will demand higher quality, better service, and more convenience. It is expected that convenience will be a top priority and that establishments that offer high quality meals, both sit down and take-out, in a minimal amount of time will be commonplace. An expansion of current take-out and delivery services is expected to occur. Gourmet take-out and delivery should also be commonplace. The expansion of the grocery store to food service take-out and delivery is a likely prospect.

The food service customer is changing. By the year 2000, the median age in the United States is expected to be 36.3 years old. In addition to an increase in the customers' age, household income patterns imply more discretionary dollars by the year 2000. In addition, there will be more "nontraditional" households, i.e., more singles (divorced or never married) living collectively or alone, and more one-parent families. Eating habits are expected to diverge even further from the present three meals a day in favor of "grazing", the eating of a half dozen or so small meals or snacks during the course of the day. Consumers in the future will have distinctly cosmopolitan values and habits and will be more demanding in terms of quality, variety, convenience, and service.

### Summary

Roughly, one out of every four dollars Americans spend on food is spent for food away from the home. At the present time, approximately 22.5% of all meals are eaten outside of the home in restaurants. If meals eaten outside the home at schools, businesses, and hospitals were included, this figure would be considerably higher.

When eating out, some of the most frequently ordered foods include salads, hamburgers, chicken, seafood, and french fries. In recent years, there has been much attention given to light, healthy, and nutritious meals; the emergence of the entree salad as a top contender as an on-menu entree preference is indicative of this trend. Two other items that have gained considerable popularity in recent years are fresh vegetables and fresh fruits. However, commercial establishments are still serving, and customers are still ordering, such "traditional" entrees as steak, fried chicken, fried shrimp, and roast beef. In fact, the popularity of beef remained strong over the past 15 years and the occurrences of pepper steak, prime rib, and steak teriyaki have increased steadily on menus since 1971. This further supports the slowness of changing food preferences and indicates that the trend toward lighter, healthier, and more nutritious menu offerings has not yet become a dominant force in main stream eating habits.

In the poultry group, the emergence of more elaborate entrees such as Chicken Cordon Bleu, Chicken Kiev, and Rock Cornish Hens has increased while fried chicken, roast chicken, and roast turkey have declined slightly in their appearances on menus. Much of the gain in the popularity of the more elaborate entrees may be attributed to advances in the industry that allow for many labor-intensive menu items (e.g., Chicken Cordon Bleu) to be bought frozen or prepared in advance and microwaved or convection steamed in a minimal amount of time. It is expected that as food preparation and preservation technology continue to advance, more elaborate entrees will appear on menus and become more commonplace to the consumer. An example of this is the increased on-menu occurrences of Beef Wellington over recent years. This growth in popularity may be attributed to the availability of several pre-prepared products that allow restaurants to serve the entree, where before it would have been prohibitive.

Ethnic foods are gaining in popularity. Mexican entrees have shown a strong increase during the last 15 years, and it appears they will continue to make advances in popularity on American menus. However, in 1985, Mexican food consumption declined in relation to higher income groups. The influence of Italian foods remain strong while the popularity of pizza continues to grow. Pasta dishes are increasing in popularity with both the traditional fare of pasta with red sauce or lasagna and more recent menu items such as pasta salads and Pasta Primavera. Oriental food consumption remains strong, especially among the younger age groups.

## MARINE CORPS FOOD SERVICE PERSONNEL: EXPERT OPINIONS

### Procedure

Sixteen Marine Corps food service experts from Marine Corps Headquarters, Washington, DC, Camp Johnson Schools, Camp LeJeune, NC, and Camp Pendleton, CA were interviewed for their opinion on the food service requirements of the Marine Corps during the next 5 to 20 years. In addition, each individual answered a detailed questionnaire concerning the future Marine Corps food service customer, food service personnel, and dining/kitchen facilities. The questionnaire consisted of 163 items in the following areas:

- food (e.g., preference, quality, variety, etc.).
- service (e.g., food service styles, food preparation styles, length of service lines, etc.).
- dining/kitchen environments (e.g., aesthetics, equipment design, temperature, etc.).
- management (e.g., supervisory skills, personnel training, record keeping, etc.).
- customer absenteeism (e.g., monotony of facility, hours of operation, quality of food, length of lines, etc.).

Each item was rated using the following 9-point scale:

- 9 = extremely important
- 8 = very important
- 7 = moderately important
- 6 = slightly important
- 5 = neutral, neither important nor unimportant
- 4 = slightly unimportant
- 3 = moderately unimportant
- 2 = very unimportant
- 1 = extremely unimportant

The Appendix contains a copy of the questionnaire.

### Results

The items were divided into four categories:

- Food Items and Food Preparation Styles
- Management, Training, and Personnel
- Service-Related Factors (including: cleanliness/sanitation)
- Environment and Design Factors

A breakdown according to these categories is presented in Table 13 for the 69 items that had a mean rating of 8 or higher. These 69 items represented 42% of the total number of items that were on the questionnaire.

TABLE 13. Critical Items for the Marine Corps Food Service System for Years 1990 to 2005.

<u>I. Food Items and Food Preparation Styles</u>	<u>Rating</u>
Good food quality	9.00
Salad Bars	8.94
Maintaining peak freshness of foods	8.88
Quality of meal: breakfast	8.81
Quality of meal: lunch	8.81
Taste of the food	8.75
Quality of meal: dinner	8.75
Pleasant food appearance	8.70
Proper temperature of food	8.69
Portion size: breakfast	8.56
Uniformity and quality	8.50
Portion size: dinner	8.50
Portion size: lunch	8.38
Multiple entrees	8.31
Short order grill	8.31
Variety for salads	8.31
Influence on absenteeism: quality of food perceived to be poor	8.31
Preparation style: baking or roasting	8.25
Preparation style: broiling or grilling	8.19
Variety of meats	8.12
How well entrees and side orders complement each other	8.06
Variety for vegetables	8.06
Variety for beverages	8.06
<u>II. Management, Training, and Personnel</u>	
Increased food preparation skills of the USMC cooks	8.88
Increased supervision skills of the dining facility supervisors	8.88
Improved supervisory skills of the chief cook	8.75
Provide on-job-training for food service personnel	8.69
Positive attitude of food service personnel	8.62
Increased communication between food service personnel and management	8.56
Management food costs	8.38
<u>III. Service-Related Factors (including cleanliness/sanitation)</u>	
Maintain good sanitation practices	8.94
Cleanliness of silverware	8.88
Cleanliness of kitchen machinery	8.88
Cleanliness of dishes and glasses	8.88
Adequate staffing of dining facilities	8.81
Cleanliness of serving counters	8.81
Cleanliness of kitchen area	8.81
Cleanliness of dispensing devices	8.81
Maintain high cleanliness standards	8.75
Avoiding a shortage of proper condiments	8.69
Speed of service: breakfast	8.69

TABLE 13. Critical Items for the Marine Corps Food Service System for Years 1990 to 2005 (cont'd).

III. <u>Service-Related Factors (including cleanliness/sanitation)</u>	<u>Rating</u>
Elimination of flies/insects from dining/kitchen area	8.62
Cleanliness of trays	8.62
Avoiding runouts of food items	8.56
Avoiding a shortage of proper utensils	8.50
Speed of service: lunch	8.50
Cleanliness of tables and chairs	8.43
Service styles: self-service bars	8.25
Speed of service: dinner	8.25
Quality of service by dining facility personnel	8.19
Influence of absenteeism: long waiting lines	8.19
Importance of reducing time spent in waiting lines	8.12
IV. <u>Environment and Design Factors</u>	
Environmental control of temperature: kitchen	8.75
Environmental control of ventilation: kitchen	8.69
Specific equipment design: safety features	8.62
Design of storage space: adequate safety measures	8.62
Adequate space/body clearances: equipment operation	8.56
Environmental control of humidity: kitchen	8.31
Environmental control of ventilation: dining area	8.31
Environmental control of temperature: dining area	8.31
Adequate workspace in kitchen	8.25
Avoid overcrowded facilities	8.25
Specific equipment design: ease of operation	8.25
Environmental control of humidity: dining area	8.19
Design of storage space: organization of storage area	8.12
Design of storage space: adequate lighting	8.12
Skid-free floor coverings in kitchen	8.00
Adequate space/body clearances: kitchen	8.00
Residence: on-post bachelor quarters	8.00

Of the 163 items there was only 1 item on which the 16 raters were in total agreement as to its importance during the next 5 to 20 years: good food quality ( $x = 9.0$ ). Of the 23 items composing the Food Items and Food Preparation Style category, the majority were related to the quality issues of taste, freshness, variety, proper temperature, and portion size. The quality of the food being perceived as poor was also viewed as a major contributor to absenteeism in the dining facilities. Quality and portion size were expressed as critical items for each of the three daily meals. Variety was also rated as a critical item for salads, meats, vegetables, and beverages. Related to the variety issue and rated equally important were the offering of multiple entrees and the use of short order grills.

An item that was rated as being especially important during the coming 5 to 20 years was the use of salad bars. Salad bars were the second highest rated item, receiving a vote of 9 from 15 of the 16 raters with the remaining vote being an 8 ( $x = 8.938$ ). With the high importance ratings for variety, quality, and freshness, the high rating of salad bars appeared to be quite logical.

Baking, roasting, broiling, and grilling were food preparation styles perceived to be more important in the long-term than deep frying, frying, steaming, or boiling.

The Management, Training, and Personnel category had seven items that were rated 8.0 or above. These items reflect a perceived need to improve the food preparation skills of the chief cooks and the food service personnel. These skills are directly related to the importance that was emphasized on achieving good food quality. Supervisory skills for both the cooks and dining facility supervisors were stressed as important features as were communication skills, positive worker attitudes, and the management of food costs. Overall, a need for increased managerial skills within the food service system was deemed critical for improvement during the years 1990 to 2005.

The Service-Related Factors (including cleanliness/sanitation) category contained 22 items that received a rating of 8.0 or higher, 10 of which were directly related to cleanliness and sanitation. Cleanliness and sanitation are extremely important in the food service business due to the possibility of contamination and spoilage; naturally, these issues were perceived to be of high importance during the next 20 years. Seven of the items in this category were related to the speed and quality of service; speed of service was a critical constituent for all three daily meals. (The quality of the service being perceived as poor was rated as an especially important factor, influencing absenteeism from the dining facility.)

Providing adequate staffing and reducing the amount of time spent waiting in lines were also viewed as critical to long-range Marine Corps Food Service System improvements. The presence of long lines was cited as a strong influence on absenteeism. Three items concerning shortage were also included in this category. Avoiding shortages of food items (e.g., runouts of entrees), proper utensils, and condiments were viewed as instrumental to a successful food service operation in the future. Also noted was the importance of the service style that allowed for self-service bars. This service style was rated higher than any of six others included in this survey and was the only style to have a mean rating above 8.0. The importance of this style may also be reflected in the extremely high rating received by salad bars in relation to their importance to the food service system future years.

The Environmental and Design Factors category contained 17 items. Three items concerning environmental control (temperature, ventilation, and humidity) were rated as being critical to both the kitchen and dining areas. These three environmental factors were rated higher than control over noise, lighting, and adequate space. The ratings emphasized the importance of adequate safety measures. Safety measures such as skid-free coverings in the kitchens were also rated as high as were safety features on the equipment used within the kitchen. A need for adequate kitchen workspace and the avoidance of overcrowding in the dining areas was noted. Adequate space in relation to

equipment operation and moving about the kitchen also emerged with ratings greater than 8.0.

Table 14 presents the mean ratings of the 16 Marine Corps food service experts on each of the 163 questionnaire items. The least relevant (most unimportant) items concerned the food system's impact on those patrons living off-post and those patrons living in family quarters on-post. Also considered unimportant or of limited importance were such aesthetic factors as tablecloths, a pleasant view, padded chairs, carpeting, and background music. Those service items receiving low ratings included the bussing of tables, self-serve sandwich counters, soup bars, late-night service, the carousel service style, table service, and stand-up eating counters. Ethnic foods, meatless entrees, reduced use of canned/processed/frozen food products, and an increased use of lemon herbs to replace butter and salt were rated as the least important food items.

TABLE 14. Mean Ratings of the 16 Marine Corps Food Service Experts on Each of the 163 Questionnaire Items.

<u>Items</u>	<u>Rating</u>
Good food quality	9.00
Salad bars	8.94
Maintain good sanitation practices	8.88
Maintaining peak freshness of food	8.88
Increased food preparation skills of the USMC cooks	8.88
Increased supervision skills of the dining facility supervisor	8.88
Cleanliness: silverware	8.88
Cleanliness: kitchen machinery	8.88
Cleanliness: dishes and glasses	8.88
Adequate staffing of dining facilities	8.81
Quality of meal: breakfast	8.81
Quality of meal: lunch	8.81
Cleanliness: serving counters	8.81
Cleanliness: kitchen area	8.81
Cleanliness: dispensing devices	8.81
Maintain high cleanliness standards	8.75
Improved supervisory skills of the chief cook	8.75
Taste of the food	8.75
Environmental control: kitchen (temperature)	8.75
Quality of meal: dinner	8.75
Avoid a shortage of proper condiments	8.75
Pleasant food appearance	8.69
Proper temperature of food	8.69
Provide OJT for food service personnel	8.69
Environmental control: ventilation of kitchen	8.69
Speed of service: breakfast	8.69
Elimination of flies/insects from dining/kitchen area	8.69
Positive attitude of food service personnel	8.62
Specific equipment design: safety feature	8.62

TABLE 14. Mean Ratings of the 16 Marine Corps Food Service  
Experts on Each of the 163 Questionnaire Items (cont'd).

<u>Items</u>	<u>Rating</u>
Importance of storage space: adequate safety measures	8.62
Cleanliness: trays	8.62
Increased communication food service personnel and management	8.56
Avoid runouts of food items	8.56
Adequate space/body clearances: equipment operation	8.56
Importance of factors for each meal: portion size/breakfast	8.56
Avoiding a shortage of proper utensils	8.50
Uniformity and quality of product	8.50
Importance of speed of service: lunch	8.50
Importance of portion size: dinner	8.50
Cleanliness: tables and chairs	8.44
Managing food costs	8.38
Portion size: lunch	8.38
Multiple entrees	8.31
Short order grill	8.31
Environmental control: humidity/kitchen	8.31
Variety: salads	8.31
Absenteeism: quality of food perceived to be poor	8.31
Environmental control: temp/dining	8.31
Environmental control: vent/dining	8.31
Adequate workspace in kitchen	8.25
Avoiding overcrowded facilities	8.25
Specific equipment design: ease of operation	8.25
Service style: self-service bar	8.25
Food preparation style: baking or roasting	8.25
Speed of service: dinner	8.25
Food preparation style: broiling or grilling	8.19
Environmental control: humidity -- dining	8.19
Quality of service by dining facility personnel perceived to be poor	8.19
Absenteeism: long waiting lines	8.19
Reducing the amount of time spent waiting in line	8.12
Importance of storage space: organization of storage area	8.12
Importance of storage space: adequate lighting	8.12
Variety: meats	8.12
How well entrees and side orders complement each other	8.06
Variety: vegetables	8.06
Variety: beverages	8.06
Skid-free floor coverings in kitchen	8.00
Adequate space/body clearances -- moving about kitchen	8.00
Importance to on-post bachelor quarters	8.00
Automatic record keeping	7.94
Offer a variety of short-order foods	7.94
Improved control: kitchen (lighting)	7.94
Improved control: kitchen (adequate space)	7.94
Adequate space/body clearances: entry and exit	7.94
Storage space: work area close proximity to storage	7.94
Influence on absenteeism: disposable income of users	7.94



TABLE 14. Mean Ratings of the 16 Marine Corps Food Service  
Experts on Each of the 163 Questionnaire Items (cont'd).

<u>Items</u>	<u>Rating</u>
Low number of safety hazards	7.88
Control location of dining facility	7.88
Improved control: dining area (adequate space)	7.88
Equipment design: readable displays (gauges, indicators, etc.)	7.88
Equipment design: shape/placement of controls (knobs, buttons, etc.)	7.81
Variety: short order foods	7.81
Absenteeism: general dining facility environment	7.81
New technologies in food preparation	7.75
Food preparation style: boiling	7.75
Improved control: dining area (noise level)	7.69
Service style: independent service islands	7.69
Food preparation style: deep frying	7.69
Food preparation style: frying, sauteing or stir-frying	7.69
Food preparation style: steaming	7.69
Designated No Smoking sections	7.62
Improved control: kitchen noise level	7.62
Adequate space/body clearances: in relation to others in kitchen	7.62
Influence on absenteeism: convenience of location	7.62
More fresh fruit and vegetables	7.56
Variable portion size	7.50
Reduced travel time to facility	7.50
Less fried - more broiled/baked and stir fried	7.44
Improved garnishing of meals	7.44
Adequate width of aisles in kitchen	7.44
Dining room convenient to enter and exit	7.44
Service style: take-out	7.44
Influence absenteeism: meal served on weekend	7.44
Increase patrons' nutritional awareness	7.38
Adequate space/body clearances: in relation to other in dining area	7.38
Service style: single straight line	7.38
Skid-free floor coverings in dining area	7.31
Pleasant ambience	7.31
Improved control over dining area	7.31
Variety: starches	7.31
Carry-out service	7.25
Posting of caloric/nutritional information	7.25
Variety: desserts	7.25
Increased input of food service personnel into meal planning	7.20
Adequate width of aisles in dining area	7.19
Patrons familiarity w/menu items	7.12
Influence on absenteeism: meal served on weekday	7.12
Influence on absenteeism: limited variety of food over 2-week period	7.12
Increased menu planning flexibilities	7.06
Special dietary offerings (e.g., low cal, low salt)	7.06
New technologies in food preparation	7.06
Lighter sauces and gravies	7.06
Influence absenteeism: limited variety of food at single meal	7.06

TABLE 14. Mean Ratings of the 16 Marine Corps Food Service  
Experts on Each of the 163 Questionnaire Items (cont'd).

<u>Items</u>	<u>Rating</u>
Non-institutional lighting	7.00
More whole grain breads, etc.	6.94
Reducing the number of calories in the food	6.94
Increase variety of the menu over a 2-week period	6.88
Influence absenteeism: limited variety of short order foods	6.88
Increase variety of food at a single meal	6.75
Draperies in dining facilities	6.67
Service style: sit-down service	6.67
Designated <u>Smoking</u> sections	6.62
Microwave cooking	6.44
A pleasant exterior appearance	6.45
A la carte menu system	6.44
Reduced sulfite preservatives	6.44
Service style: specialty counters (e.g., food court style)	6.44
Influence absenteeism: presence of fast food chains on base	6.44
Number of persons per table in dining area	6.38
Monotony of same facility	6.38
A pleasant view	6.31
Increased use of lemon and herbs to replace butter and salt	6.31
Influence absenteeism: dining times conflict with other activities	6.31
Soup bars	6.25
Background music	6.25
Provide bussing of tables	6.25
Influence of absenteeism: limited ours of operation	6.19
Padded chairs	5.94
Self-serve sandwich counters	5.94
Reduced use of canned/processed/frozen food products	5.75
Offer meatless entrees	5.69
Same eating companions	5.62
Self bussing of tables	5.56
Carpeting in dining area	5.44
Late-night service	5.38
Ethnic foods	5.19
Service style: carousel	5.19
Table service	5.12
Tablecloths in dining facilities	4.94
Stand-up eating counters	4.12
Importance to those living in off-post quarters	3.69
Importance to those living in on-post quarters	2.94
Importance to those living in off-post family quarters	2.75

#### Factors Relating to Absenteeism

The survey of Marine Corps food service experts identified three main influences on absenteeism:

- The quality of food is perceived to be poor.
- The quality of service is perceived to be poor.
- The enlistees have a greater amount of discretionary income; therefore, they choose to go off base for entertainment and dining.

Additional factors noted were inclement weather, free time to spend off base, training exercises, sport programs, inspections, and the facilities engineering/maintenance of the mess hall.

Stressed as the greatest influence on calculated absentee rates was the underlying assumption that each enlistee will eat three meals a day, 7 days a week. This assumption is not accurate for the Marine Corps enlisted population or the civilian population. A computation that uses meals served versus number of days based on three meals per day is not a totally accurate reflection of attendance records. It must be acknowledged that the total population of enlisted Marines that may be eligible to use a facility is restricted by field exercises, inspections, and other commitments. Weekends and holidays are also times when enlistees may choose to spend free time off base and their inclusion in computing absenteeism rates would incorporate a bias.

Currently, there is approximately a 60% to 65% absenteeism rate (i.e., 35% to 40% attendance rate) based on the present method of calculation. Additionally, it was unanimously suggested that if rates must be calculated that they not include data from weekends or holidays. Furthermore, it was suggested a stronger emphasis (weighting) be given to the noon time meal which was perceived to be the most important meal of the day. The breakfast meal was perceived to be the meal most often skipped (not eaten) as a function of life style or habit; it was suggested that the least emphasis be placed on this meal when calculating absenteeism rates. The opinion of the 16 Marine Corps food service experts was that based on the present methods of calculation and no changes in the food service system, we may expect an overall absenteeism rate of roughly 60% to 65% to continue during the next 5 to 20 years. It was further stated that absenteeism rates may vary considerably depending on the type of Command (School, Infantry, Headquarters, etc.) that the facility is serving and in particular the personnel in charge of a specific facility.

Several specific recommendations were given that would aid in reducing the absenteeism rate. First, the quality of the food and service must be of a high standard and competitive with that found off base. It was noted that fast-food installations on base did not contribute significantly to absenteeism. Second, equipment and layout of mess halls must provide service and quality comparable with commercial establishments. Currently, facilities are at a competitive disadvantage in trying to provide "fast-food" and take out service from a traditionally designed military mess hall. Third, particular emphasis should be placed on providing a lighter, high quality lunch. Increased variety of soups, sandwiches, and short order offerings, it was speculated, would provide return patrons for the evening meal. Increased flexibility in menu planning, inventory control, and accounting practices were cited as areas that would help to provide a better quality product. For example, a change from a monthly to a quarterly accounting system may help food service personnel to better allocate resources. Another area of concern was inventory control, the current 20% inventory system was cited as being unrealistic for a menu to be competitive with the civilian market place.

A major point emphasized by all 16 experts was that management skills need to be increased. It was stated that only through improved management would the food quality and level of service be improved and attendance rates increased.

### Summary

Without question the number one concern facing the Marine Corps food system during the next 5 to 20 years will be the improvement of meal quality. Variety, freshness, portion size, and appearance are areas that will require improvement if the Marine Corps food system is to meet the needs and wants of the enlisted personnel in the coming years. It is the opinion of several Marine Corps food service experts that the "key to improvement" resides with providing the food service officers in these facilities with the managerial skills necessary to run an efficient and productive mess hall. Several experts suggested that recruitment practices should include soliciting individuals for food service management positions.

Technological advancements and automation should help aid the upgrade process of the current system. The automation process outlined in the Marine Corps Food Management Information System (MCFMIS) will automate food service operation in the following areas:

- Subsistence Supply (requisitioning, receiving, storing, and issuing of subsistence items);

- Food Service Support (management and operation of individual and consolidated mess halls in garrison); and

- Headcount Procedures using an automated ID card as a data entry for an after-the-fact accountability verification against the manpower data base.

However, as noted by several experts, in order for any advancements in automation technology to be reflected in the final product (meal served) there must be effective managerial supervision at the individual facility level.

The present absenteeism rates are viewed as a poor representation of the success or performance of the food service system. The evaluation system based on three meals a day, 7 days a week is viewed as unrealistic and somewhat biased. Alternately, it is suggested that weekends and holidays be excluded from these calculations and that an in-depth exploration of the absenteeism issue be addressed as a separate issue.

## CONCLUSIONS

In generating information for Marine Corps food service requirements for the 1990's, investigations into demographics, menu trends, and Marine Corps expert opinions provided insight for the definition of the user population, the trends and their relation to food preparation and service, and opinions concerning menu offerings, food quality, personnel, absenteeism, and facilities. The user population has not changed significantly in size and structure and is not likely to be altered in the next 5-20 year period. Therefore, the construction of new dining facilities and the refurbishing of old facilities should be targeted at meeting the needs of roughly the same number of enlisted personnel as currently exist.

Because trends in food service have only slowly progressed to a "lighter", healthier diet, it is likely that the popular menu items of today will remain as the most desirable. However, because of advanced technologies, changes in food preparation methods will provide the customer with a healthier product. The customer can be offered more elaborate entrees because of the variety of prepared foods available in today's market and in the future. The increase in popularity of ethnic foods will probably influence menus but will most likely be dependent on the geographic location of the facility, the user population at that facility, and the availability of these items at those locations.

The opinions of Marine Corps food service personnel expressed specific concerns for food service improvement. The improvements in meal quality, menu planning, inventory control, etc. can only be satisfied through equal improvements in management. The implications of these expert opinions and the need for increasing managerial capabilities will be critical in the design of an effective food service system for the Marine Corps in the 1990's.

## BIBLIOGRAPHY

Backas, Nancy, Laura Pokrzywa, and Richard J. McNeilly, "The Menu Censors: A 15 Year Retrospective," Restaurants and Institutions, February 19, 1986, Vol. 96 No. 4, p. 127.

"Choice in Chains," Restaurants and Institutions, December 25, 1985, Vol. 95 No. 26, p. 119.

"Current Issues Report: The Restaurant Industry in 1990," National Restaurant Association, January 1986.

Fennema, Owen, "The Food Industry: Charting a Course to the Year 2000," Food Technology, January 1983, Vol. 37 No. 1, p. 46.

"Food Service 2000," Restaurant Business, May 1, 1985.

"Industry Trends," The Consultant, Food Service Consultants Society International, Volume, XIX, No. 3, Summer 1986.

Lemaire, William H., "Food in the Year 2000," Food Engineering, May 1985, Vol. 57 No. 5, p. 90.

"Reconnaissance '85", Restaurants and Institutions, November 27, 1985, Vol. 95 No. 24, p. 105.

"Tastes of America," Restaurants and Institutions, December 11, 1985, Vol. 95 No. 25, p. 97.

"12-Year Menu Trends," Restaurants and Institutions, 1984.

"1985 Menu Census," Restaurants and Institutions, February 20, 1985, Vol. 95 No. 4, p. 95.

"1986 Annual Report: Military," Restaurants and Institutions, January 8, 1986, Vol. 96 No. 1, p. 182.



**APPENDIX:**

**Marine Corps Long-Term (1990 to 2005) Food Service Questionnaire**



# MARINE CORPS LONG-TERM (1990 to 2005) FOOD SERVICE QUESTIONNAIRE

Name: \_\_\_\_\_  
Rank: \_\_\_\_\_  
MOS: \_\_\_\_\_

The information you provide on this form will be used to aid in the long range (during the next 5 to 20 years) development of design guides for the renovation of existing or construction of new Marine Corps enlisted personnel dining facilities.

Listed on the following pages are factors related to the future Marine Corps food service customer, food service personnel, or dining/kitchen facilities. We would like you to rate the importance of each of these using the following 9-point scale.

- 9 = extremely important
- 8 = very important
- 7 = moderately important
- 6 = slightly important
- 5 = neutral, neither important nor unimportant
- 4 = slightly unimportant
- 3 = moderately unimportant
- 2 = very unimportant
- 1 = extremely unimportant

Your rating should reflect your opinion as to what the importance/unimportance of each factor will be to the Marine Corps Food System in the next 5 to 20 years.

having multiple entrees.....	_____
salad bars.....	_____
short order grills (hamburgers, pizza, fried chicken, etc.).....	_____
draperies in dining facilities.....	_____
carpeting in dining facilities.....	_____
tablecloths in dining facilities.....	_____
non-institutional lighting.....	_____
good food quality.....	_____
carry-out service.....	_____
late-night service.....	_____
ethnic foods.....	_____
posting of calorie/nutritional information (e.g., at salad bar).....	_____
stand-up eating counters.....	_____
increased menu planning flexibilities.....	_____
variable portion sizes.....	_____
increased communication between food service personnel and managers...	_____
special dietary offerings (e.g., low calorie, low salt).....	_____
padded chairs.....	_____

maintaining good sanitation practices.....	_____
table service.....	_____
maintaining peak freshness of foods.....	_____
less fried and more broiled/baked and stir-fried foods.....	_____
more fresh fruit and vegetables.....	_____
more whole grain breads, etc.....	_____
automatic record keeping.....	_____
improved garnishing of meals.....	_____
microwave cooking.....	_____
new technologies in food preservation.....	_____
designated <u>No Smoking</u> sections.....	_____
designated <u>Smoking</u> sections.....	_____
eliminating flies/insects from dining/kitchen areas.....	_____
reducing the amount of time spent waiting in lines.....	_____
avoiding runouts of food items.....	_____
avoiding a shortage of proper condiments.....	_____
avoiding a shortage of proper utensils.....	_____
avoiding overcrowded facilities.....	_____
adequate staffing of dining facilities.....	_____
offer a variety of short order foods.....	_____
a pleasant view.....	_____
a pleasant exterior appearance.....	_____
low number of safety hazards.....	_____
reduced travel time to facility.....	_____
adequate width of aisles in kitchen.....	_____
adequate width of aisles in dining area.....	_____
skid-free floor coverings in kitchen.....	_____
skid-free floor coverings in dining area.....	_____
adequate work space in kitchen.....	_____
pleasant food appearance.....	_____
managing food costs.....	_____
patrons familiarity w/menu items.....	_____
new technologies in food preparation.....	_____
increased input of food service personnel into meal planning.....	_____
a la carte menu system.....	_____
reduced use of canned/processed/frozen food products.....	_____
self-serve sandwich counters.....	_____
soup bars.....	_____
increased use of lemon & herbs to replace butter & salt.....	_____
reduced sulfite preservatives.....	_____
increasing patron's nutritional awareness.....	_____
maintain high cleanliness standards.....	_____
pleasant ambience.....	_____
central location of a dining facility.....	_____
uniformity & quality of product.....	_____
positive attitude of food service personnel.....	_____
lighter sauces and gravies.....	_____
offer meatless entrees.....	_____
increase variety of food at a single meal.....	_____
increase variety of the menu over a two-week period.....	_____
proper temperature of food.....	_____
background music.....	_____
improved supervisory skills of the chief cook.....	_____
increased food preparation skills of the USMC cooks.....	_____

increased supervision skills of the dining facility supervisor.....  
 provide on-the-job training for food service personnel.....  
 dining room convenient to enter and exit.....  
 self bussing of tables.....  
 provide bussing of tables.....  
 reducing the number of calories in the food.....  
 taste of the food.....  
 how well entrees & side orders complement each other.....  
 number of persons per table in dining area.....

The importance of improved control over:

	<u>In dining area</u>	<u>In kitchen</u>
temperature.....	_____	_____
noise level.....	_____	_____
lighting.....	_____	_____
humidity.....	_____	_____
ventilation.....	_____	_____
adequate space.....	_____	_____

The importance of adequate space/body clearances (e.g., whole body, head, limbs, etc.):

In equipment operation.....  
 In entry & exit areas.....  
 In moving around kitchen.....  
 In relation to others in kitchen.....  
 In relation to others in dining area.....

The importance of each food preparation style:

broiling or grilling.....  
 baking or roasting.....  
 deep frying.....  
 frying, sauteing or stir-frying.....  
 steaming.....  
 boiling.....

The importance of the following factors for each meal:

	<u>Breakfast</u>	<u>Lunch</u>	<u>Dinner</u>
quality of meal.....	_____	_____	_____
speed of service.....	_____	_____	_____
portion size.....	_____	_____	_____

The overall level of importance of the Food Service System to those living in:

on-post bachelor quarters..... \_\_\_\_\_  
on-post family quarters..... \_\_\_\_\_  
off-post bachelor quarters..... \_\_\_\_\_

The importance of specific equipment design (ranges, burners, grills, coffee makers, etc.):

shape/placement of controls (knobs, buttons, etc.)..... \_\_\_\_\_  
readable displays (gauges, indicators, etc.)..... \_\_\_\_\_  
ease of operation..... \_\_\_\_\_  
safety features..... \_\_\_\_\_

The importance of storage space:

organization of storage area (ease of storage and removal).... \_\_\_\_\_  
work area in close proximity to storage area..... \_\_\_\_\_  
adequate lighting..... \_\_\_\_\_  
adequate safety measures..... \_\_\_\_\_

The importance of each service style:

single straight line..... \_\_\_\_\_  
independent service islands..... \_\_\_\_\_  
self-service bars..... \_\_\_\_\_  
carousel..... \_\_\_\_\_  
take-out..... \_\_\_\_\_  
sit-down service..... \_\_\_\_\_  
specialty counters (e.g., food court style)..... \_\_\_\_\_

The importance of cleanliness to:

serving counters.....  
kitchen area.....  
dispensing devices.....  
silverware.....  
trays.....  
dishes and glasses.....  
tables and chairs.....  
kitchen machinery.....

The importance of variety for each of the following:

short order foods.....  
meats.....  
starches.....  
vegetables.....  
salads.....  
beverages.....  
desserts.....

The importance of each factor in contributing to absenteeism (non-attendance):

meals served on weekday.....  
meals served on weekend.....  
convenience of location.....  
general dining facility environment.....  
same eating companions.....  
limited hours of operation.....  
monotony of same facility.....  
quality of food perceived to be poor.....  
quality of service by dining facility personnel  
perceived to be poor.....  
limited variety of food at a single meal.....  
limited variety of food over a 2 week period.....  
limited variety of short order foods.....  
long waiting lines.....  
presence of fast food chains on base.....  
disposable income of users.....  
dining times conflict with other activities.....  
other (please specify).....

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_